

## NEWSLETTER

Fall 2018

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### President's Message



Dear Colleagues,

I wish to welcome you to the Physics, Instrumentation and Data Sciences Council (PIDSC). This is the first year following the official name change (with overwhelming approval by council membership) from our original name, the Computer & Instrumentation Council (CaIC). We believe the new council name better reflects the areas of expertise and activity of our council members. In addition to our continued strengths in physics, instrumentation and data analysis methods (more on this later), our membership is developing expertise in emerging “data sciences” sub-fields such as radiomics, machine learning and data-driven analysis, as showcased by our scientific as well as continuing education (CE) sessions in the recent years. We continue to build strong collaborative and educational efforts, and to add strengths to the nuclear medicine community, aimed at high-quality, cost-effective and personalized healthcare.

Overall, our members are active on numerous fronts. We develop new exciting imaging detectors and instruments. We develop state-of-the-art algorithms and software for image generation and processing. We work hard to improve quality and quantitative accuracy of nuclear medicine images. We oversee quality control and equipment evaluation in settings ranging from community hospitals to academic research centers. And within SNMMI, we are also home to physicians, technologists, and other scientists, experts and trainees, who have an interest in the technology of molecular imaging.

The PIDSC strives to ensure that the CE sessions at SNMMI mid-winter and annual meetings fulfill the needs and interests of the nuclear medicine community. It provides input and expertise to organizations within and outside of SNMMI on matters related to medical physics, instrumentation and data analysis.

At each SNMMI annual meeting, our council oversees Young Investigator Awards for Physics, Instrumentation and Data Sciences presentations, recognizing the achievements of those new to the field. We present the Edward J. Hoffman Memorial award in recognition of individuals who have made outstanding contributions to molecular science, instrumentation and education. This award is a tribute to

Dr. Hoffman, a pioneer in nuclear medicine instrumentation. The PIDSC also administers the Tracy Lynn Faber Memorial Award. Dr. Faber was a pioneer in 3D visualization and analysis of gated myocardial perfusion imaging, and the award is a tribute to her legacy and honors the advancement of women in medical imaging sciences.

Whether you are a scientist or engineer looking for a community of peers for discussion and ideas, a physician with insight and interest in applications of imaging techniques, or a technologist trying to better utilize your facility's imaging systems, the PIDSC is a council that needs your expertise and which can also be of value to you. Please join us today.

*Arman Rahmim, PhD*  
*President, PIDSC*

## **2018 Annual Meeting CaIC Sponsored Sessions**

The newly renamed PIDSC (formerly the Computer and Instrumentation Council - CaIC) was pleased to sponsor the following categorical sessions and continuing education sessions at the June 2018 SNMMI Annual Meeting in Philadelphia, Pennsylvania. All sessions were well attended. Thank you for participating.

### **CaIC Categorical:**

- Radiomics and Machine Learning Methods and Applications in Radiology and Nuclear Medicine  
Organizers: Arman Rahmin, Steve Y. Cho (with CMIIT)
- PET/CT and PET/MR for adults and Children: Fundamental and Evolving Practices  
Organizers: Ruth Lim, Mark Smith, Katherine Zukotynski (with CoE and PIC)

### **CaIC Educational Sessions:**

- Crystals to Quantitation to QC: A field guide to SPECT and PET Instrumentation  
Organizers: Mark Smith
- Advances in Simultaneous PET/MR Imaging and Clinical Applications  
Organizers: Richard Laforest, George El Fakhri
- Motion Correction Strategies in PET  
Organizers: Chi Liu, Arman Rahmin
- Quantitative Imaging for Dosimetry in Radionuclide Imaging and Therapy  
Organizers: Karin Knesaurek
- Measurement of Absolute Blood Flow, Part I: Optimization and Implementation of PET Evaluation  
Organizers: Terry Ruddy, Mark Smith (with Cardio Vascular Council)
- Measurement of Absolute Blood Flow, Part II: Current State of Dynamic SPECT Imaging  
Moderators: Terry Ruddy, Mark Smith (with Cardio Vascular Council)
- Computer and Instrumentation Council Business Meeting/Edward J. Hoffman Memorial Lecture  
Organizers: Mark Smith, James Galt

## 2018 Edward Hoffman Memorial Award Lecture



This award was established to honor the memory of Professor Edward J. Hoffman. It recognizes scientists in the field of nuclear medicine for their service and devotion to research and development of nuclear medicine instrumentation and to educating and training of the next generation of scientists. Learn more about the Hoffman Award [HERE](#)

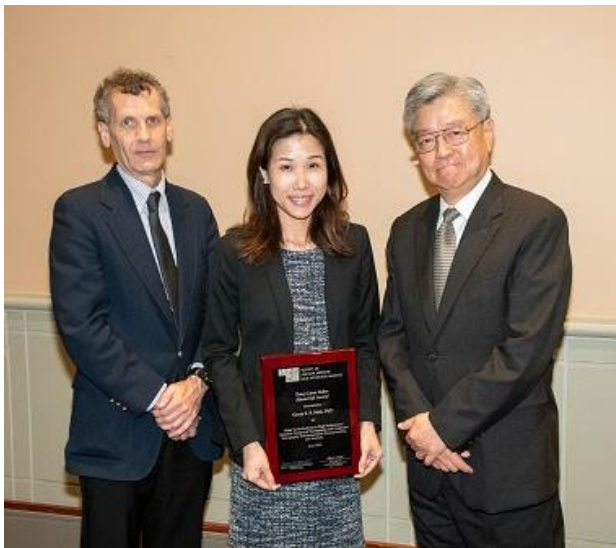
The 2018 Hoffman Award was presented to **Eric Frey, PhD** during the Edward Hoffman Memorial Lecture at the SNMMI Annual Meeting.

Pictured from left to right: Mark Smith, PhD, CaIC Immediate Past President, Eric Frey, Ph.D., 2018 Hoffman Award recipient and Yong Du, PhD

## 2018 Tracy Lynn Faber Memorial Award

The award was established to honor the memory of Tracy Lynn Faber and is given each year to support advancement of women in medical imaging sciences. The award is given either to an individual who has promoted significantly advancement of women in medical imaging sciences, or to a woman in early- or mid-career who has made one or more significant contributions to medical imaging sciences. Learn more about the Faber Award [HERE](#).

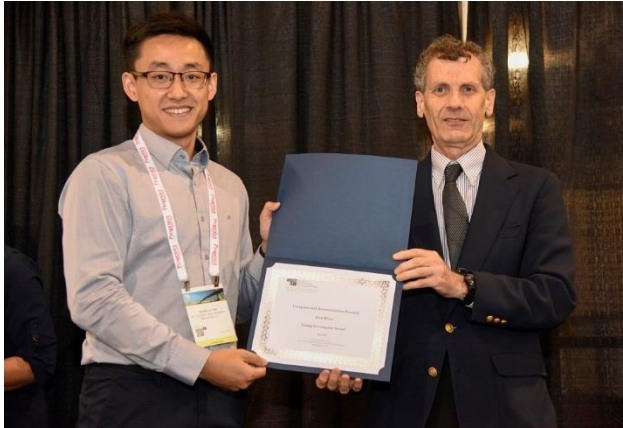
The 2018 Faber Award was presented to **Greta Mok, PhD** during the PIDSC business meeting.



Pictured from left to right: Mark Smith, PhD, CaIC Immediate Past President, 2018 Tracy Lynn Faber Award winner Greta Mok, PhD, and Benjamin MW Tsui, PhD

## 2018 CaIC Young Investigator Awards

The CaIC Young Investigator Awards are presented to the authors of the best scientific abstracts on the topic of instrumentation, algorithm, or data analysis in nuclear medicine by young investigators. These awards were presented during the 2018 SNMMI Annual Meeting. Congratulations to everyone who have participated and especially to the following 2018 YIA winners pictured below with Mark Smith, PhD, CaIC Immediate Past President.



### 1st Place – Yihuan Liu

"Data Driven motion detection and event-by-event correction from Brain PET."

### 2nd Place – Jeffrey P. Schmall

"Characterizing the TOF performance of the PennPET Explorer scanner."



### 3rd Place – Jason B. Bini

"PET imaging of Pancreatic  $\alpha$ -cell mass with  $^{11}\text{C}$ -(+)-PHNO: Determination of the appropriate approach for quantitative analysis"

## Honorable Mentions:

- **Bao Yang** - Brain PET dose reduction using a shallow artificial neural network.
- **Alvin Ihsani** - A Novel Penalized Joint Image Reconstruction Method for Tau-PET Imaging.
- **Donghwi Hwang** - Deep learning-based attenuation correction for whole-body PET studies.
- **Saeed Ashrafinia** - Application of Texture and Radiomics Analysis to Clinical Myocardial Perfusion SPECT Imaging.
- **Jun Yeon Won** - Development and initial results of a prototype brain PET scanner using a time-based digitizer and an FPGA-based real-time coincidence processor.

## 2018 PIDSC Election Results

Congratulations to these newly elected Officers and Board Members!

Osama Malawi, PhD  
Vice President-Elect



Chi Liu, PhD

Treasurer



Joyita Dutta, PhD  
Board Member



Yong Du, PhD

Board Member



James Tyler Middlebrooks, BS, CNMT, RT(ARRT)(N)(CT)  
Technologist Board Member



### **SNMMI 2019 Mid-winter Meeting**

The 2018 SNMMI Mid-winter meeting will be held this year in Palm Spring CA from January 17-19. Please mark your calendar and plan to attend. Abstract submission opened on August 30, 2018 and will close on November 7, 2018. This year, PIDSC will be sponsoring the following two CE sessions on Saturday January 19th:

- Nuts and Bolts of Machine Learning in Nuclear Medicine  
Organizers: Arman Rahmim, David Brandon (co-sponsored with the Academic Council)
- PET Instrumentation and Data Analysis: The Essentials  
Organizers: Arman Rahmim

### **SNMMI 2019 Summer Meeting PIDSC Sponsored CE Activities**

In the coming weeks, PIDSC will be planning the CE sessions that be held during our annual meeting in Anaheim (CA) from June 25 to June 29. Please give us your ideas on a topic for a Continuing Education course or an all-day Categorical Seminar that you would like to see presented. Let us know if you would like to organize a Continuing Educational session at the SNMMI Annual meeting. The PIDSC board members and other council members are continuously thinking about educational activities for future SNMMI meetings and rely upon input from members. Proposals are usually submitted in October for the Annual Meeting held the following June. This year the deadline for categorical proposal is October 26. PIDSC will look forward to your ideas!

### **New Track and Categories for 2019 SNMMI Annual Meeting Abstract Submission**

If you are planning on submitting a scientific abstract to the 2019 SNMMI Annual Meeting (the abstract site opens in late October), note that the track encompassing the core areas of expertise of PIDSC members has been changed to align with the council's new name. Physics, Instrumentation and Data Sciences replaces the old track name of Instrumentation & Data Analysis. In addition, a new Data Sciences submission category has been added to the existing three categories of Instrumentation, Data Analysis & Management and Image Generation. The Data Sciences category will be the home for abstracts in the areas of artificial intelligence, machine learning, data mining, radiomics and related data science areas.

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The Physics, Instrumentation and Data Sciences Council plays an integral role in the abstract review process by selecting the PIDS track Vice-Chair and Sub-Chairs, subject to approval by the Scientific Program Committee. The Vice-Chair and Sub-Chairs manage the review process, including the selection of reviewers from among the council members. The Sub-Chairs are responsible for building the oral sessions and for presenting the highlights in their category area in the Basic Science Summary Session devoted to the PIDS track. The council appreciates the volunteer work of the chairs and reviewers to help make the annual meeting a success.

We look forward to your abstract submissions for the 2019 SNMMI Annual Meeting!

### **Council/Center Internships**

SNMMI has announced the call for applications to the Councils/Centers Internship Program. This program is designed for students and young professionals (physicians, technologists, or scientists) within 10 years of completing training. Each of the Councils and Centers will select one intern to serve a 2-year term as a non-voting member of its Board of Directors. Apply [here](#).

**All applications must be received by December 9, 2018.**

### **SNMMI Connect**

Earlier this summer the SNMMI launched the SNMMI Connect to help connecting scientists and all professionals involved in Nuclear Medicine. Please visit the web site and join in. This is an excellent opportunity to exchange ideas and stay connected with issues in nuclear medicine and from the Society. More information can be found [here](#). Through this new online community, members can connect and collaborate with colleagues using virtual networking features.

### **2018- 2019 PIDSC Board of Directors**

<a href="#">Arman Rahmim, PhD</a>	Council President
<a href="#">Richard Laforest, PhD</a>	Council Vice President
<a href="#">Osama Malawi, PhD</a>	Council Vice President-Elect
<a href="#">R. Glenn Wells, PhD</a>	Council Secretary
<a href="#">Chi Liu, PhD</a>	Council Treasurer
<a href="#">Mark F. Smith, PhD</a>	Council Past-President
<a href="#">Robert Doot, PhD</a>	Council Board of Directors
<a href="#">Phillip Kuo, MD, PhD</a>	Council Board of Directors
<a href="#">Joyita Dutta, PhD</a>	Council Board of Directors
<a href="#">James Tyler Middlebrooks, CNMT, NCT, PET, RT(N)(CT)</a>	Council Board of Directors
<a href="#">Yong Du, PhD</a>	Council Board of Directors
<a href="#">Alan B. Packard, PhD</a>	Board Liaison
<a href="#">Nicolas A. Karakatsanis, PhD</a>	Intern

**You can follow the activities and announcements of PIDSC [HERE](#)**